# MARINE REVIEW.

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## One Difficulty Follows Another in Freight Matters.

One difficulty seems to follow another in preventing a return to normal conditions in the lake carrying trade. While furnaces have been shut down almost without exception, on account of labor troubles in the coal and coke regions, vessels have gone on bringing down ore in large quantities at low freights, in the absence of anything else to do, until furnace yards and Lake Erie docks are crowded to an extent that must delay shipments and probably result in additional cause for another period of suspension, on account of the great loss of time in the furnace regions. As an illustration of the crowded condition of docks, it may be stated that great difficulty was found during the past few days in securing space for a small lot, probably not more than 10,000 tons, of surface ore to be moved from the Brotherton mine, Gogebic range, and in this connection a correction may be made of the note reporting a resumption of operations at this mine. The mine is full of water, and it is not the intention to resume mining. Any work at the property will be confined to moving the small amount of ore in stock.

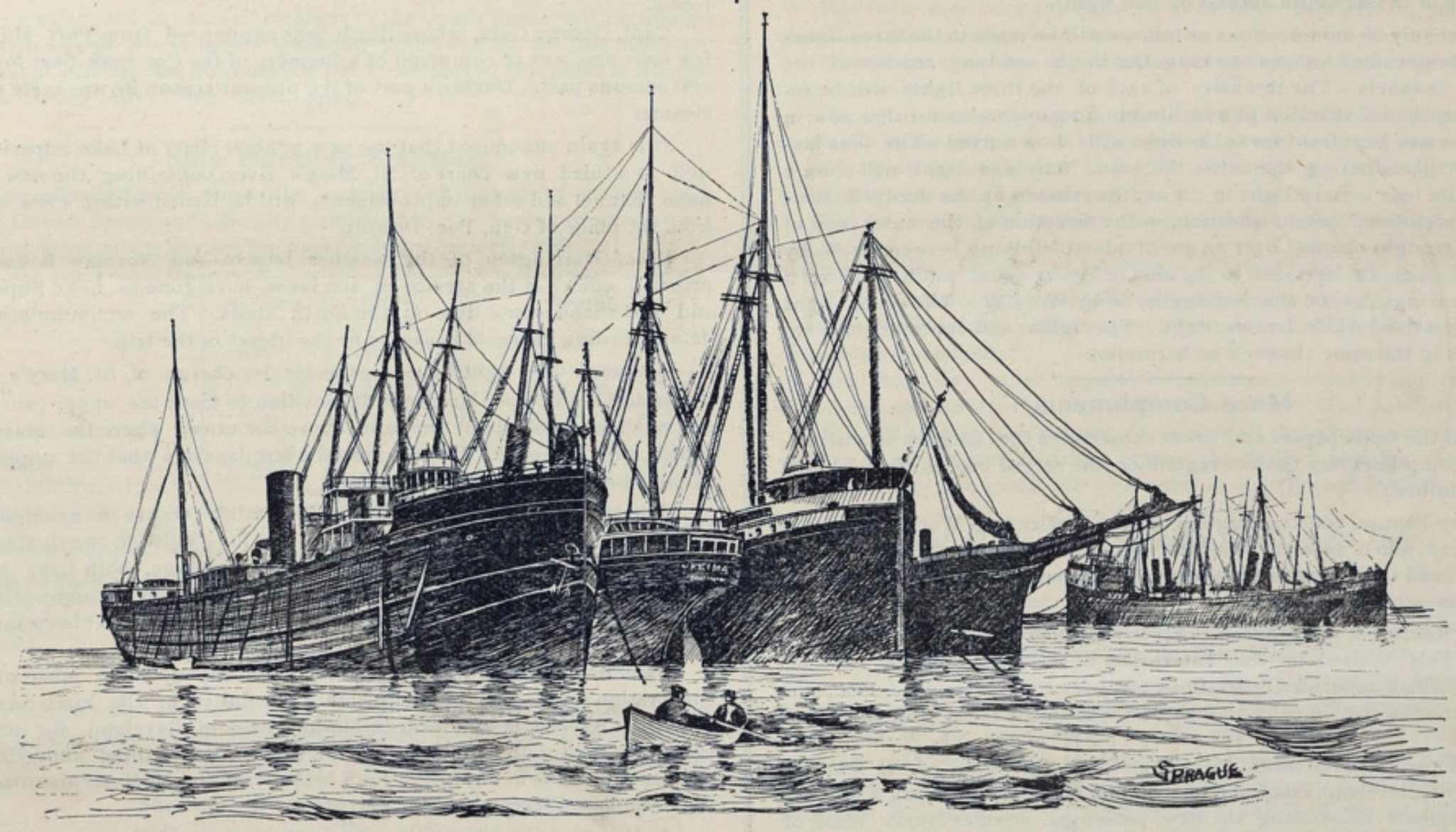
Some encouragement for vessel owners might be had from the report that 300,000 or 400,000 tons of ore was to be mined and shipped from the Biwabik mine, Mesabi range, before the close of navigation, if a confirmation of the statement was to be had from those in control of the mine. The Cleveland agents of the Biwabik have made no contracts for this season, and 300,000 tons or more of their ore to be thrown on the freight market at the present time would be an item of no small significance, but the chances are rather against than in favor of the ore being offered to vessels. The Cleveland agents of the mine have not been disposed to give out much information regarding its affairs, but it is, of course, well known that to begin with there is no demand at the present time under a lease like that of the Biwabik for any such quantity of Mesabi ore. The little demand that exists is for such of the old range Bessemer ores as can be secured, and rather more against Mesabis than during the winter. The Biwabik, on which the Rockefeller syndicate holds a lease at 25 cents royalty, was re-leased to Peter Kimberley under conditions providing for an output this year of 400,000 tons at a royalty of 50 cents a ton. This sub-lease has since fallen into the hands of Tod, Stambaugh & Co. of Cleveland and Messrs Beyers, Patterson and others, through advances made to Mr. Kimberley, and nothing has been heard of any modification of its conditions. It would not be reasonable to suppose that the syndicate controlling the bulk of Mesabi properties would make any marked concessions in a lease to competitors. But aside from all this there are other properties on the Mesabi having good ore and as low as 35 cents royalty—the Commodore, for instance—that are not attempting to do any mining at present prices. With ore $1 a ton higher than it is at present the Biwabik royalty of 50 cents was all right, but it does not seem as though much in the way of shipments from the mine may be expected this season, however the requirements of the lease referred to may be met or adjusted.

Vessel owners' hopes for a heavy movement of coal are slow of realization, and all talk of grain shipments is purely speculative. The close of another week finds the strike troubles in some of the soft coal mining regions, notably the Wheeling & Lake Erie Railway district and the Hocking valley, settled only in a straggling way, and the number of vessels seeking cargoes more numerous than loads, so that for the present, at least, cuts instead of advances are being made in rates.

## A Sign of the Times.

A picture of idleness very far removed from the scenes of great prosperity that prevailed on the lakes for several years previous to 1893 is presented in the rough engraving on this page. It is a reproduction of a sketch of eight big lake boats in ordinary within the Cleveland breakwater, made a few days ago by Howard Sprague. The boats are the big steel steamer S. S. Curry of the Hawgood & Avery line, the Yakima Tower and Wadena of the Wilson line, and the Northwest, Bulgaria, Australasia and Tasmania, owned by James Corrigan. These eight boats have a carrying capacity of about 24,000 net tons They were, of course, not at the time the only boats, even in Cleveland, from which crews had been paid off. Up the river were the Olympia, also of the Wilson line, and the Servia and Moravia of the Hawgood & Avery fleet. Numerous other large freighters, notably all of the big Bradley fleet, excepting four or five stone and lumber carriers, might be included in a list of vessels in ordinary if the same was being made up.

"I have ore contracts for those boats at 85 cents—not 80 cents," said Mr. James Corrigan, upon his attention being called to the picture, "but if other vessel owners are willing to carry the stuff at 60 cents and allow me to make 25 cents a ton on it, I am satisfied that they should do so. I have figured the thing pretty fine, however, and I am at a loss to understand how they can do it."




A SIGN OF THE TIMES.

VESSELS OF THE HAWGOOD & AVERY, WILSON AND CORRIGAN LINES IN ORDINARY WITHIN THE CLEVELAND BREAKWATER ENCLOSURE.

## Notices to Mariners.

The July bulletin from the light-house board giving all of the latest changes in aids to navigation is in print. A copy of it will be sent free of charge to any address on application to the light-house board, Washington, D. C.

A fixed red lens-lantern light will be established in the structure recently erected on Mamajuda shoal, in about 3½ feet of water, about 600 feet N. ¾ E. from Mamajuda light. With Mamajuda light as a rear light, this light forms a range to mark the line of best water passing about 950 feet to the eastward of Grassy island light (about 350 feet to the eastward of the curve of 18 feet depth abreast of Grassy island light) to a point about three-quarters of a mile from the new light.

About the 25th inst., Muskegon pierhead (front) light (fixed red) will be moved 323 feet nearer the outer end of the south pier at the entrance to Muskegon harbor, Lake Michigan, and exhibited from a lantern in the inclosed glazed end of an elevated conduit extending shoreward 580 feet to the pierhead light tower. The distance between the lights will then be about 586 feet, and the lights will, as heretofore, form a range for approaching the harbor, the range line approximating the line of direction of the outer end of the south pier.

Two changes in Detroit river lights are announced to take place this week. A fixed white lens-lantern light will be established in each of the two structures recently erected on the east side of Grosse isle, nearly abreast of the south end of Fighting island. The range line will mark the line of best water from its intersection with the line of Grosse isle, lower range, up the river, to a point from which Mamajuda range (front) light will become visible and bear W. ¾ N. The range line passess about 750 feet to the eastward of Mamajuda light (about 350 feet to the eastward of the curve of 18 feet depth abreast of that light).

About July 20 modifications as follows will be made in the three lights of the Maumee bay ranges marking the south and long reaches of the dredged channels. The intensity of each of the three lights will be increased by the substitution of new illuminating apparatus for that now in use. Maumee bay (front for both) light will show a fixed white lens lantern light illuminating the entire horizon. The east light will show a fixed white lens lantern light to the southwestward up the dredged channel, as heretofore, and, in addition, in the direction of the outer end of the new straight channel over an arc of about 50° lying between S. W. by S. and W. ⅝ S., the entrance to the channel lying about midway between these bearings, or on the bearing S. W. by W. ⅛ W. The south light will show a fixed white lantern light. The lights will continue to serve as guides in the same channels as heretofore.

## More Compliments.

From the trade papers and from subscribers the REVIEW is still receiving complimentary notices regarding the recent big edition. A few of them follow:

Henry Penton, constructing engineer, Frontier Iron Works, Detroit—"I am very much pleased with the large issue of the REVIEW. It is splendid, and the elegant supplements will be a gratifying addition to my marine scrap book."

J. B. Robinson, the Johnson Company, Johnstown, Pa.: "You can not be too highly praised for your enterprise in the issue of June 29. Can you not furnish superior illustrations for your regular numbers also, and raise your subscription price to meet it? Get in the front rank, price and all."

American Manufacturer, Pittsburg—"The last issue of the MARINE REVIEW of Cleveland, consisted of a double number, including a number of supplements illustrating the new passenger steamer North West, of the Northern Steamship Company, and giving photographs of the officers and managers of the Lake Carriers' Association. The large number of engravings makes the edition an exceedingly handsome one."

Iron Trade Review, Cleveland. "The MARINE REVIEW of Cleveland made its last issue a double number, the special feature of which was a profusion of photographic views of the new passenger steamer North West. As representing the height of lake ship building practice the North West was chosen for this elaborate setting forth of her details, by means of detail drawings, half-tones and descriptive matter. The issue was in all respects exceedingly creditable."

## Official Numbers and Tonnage.

The bureau of navigation, E. T. Chamberlain commissioner, assigned official numbers and tonnage to the following steam vessels of the lakes during the week ending July 7: Nicaragua, Port Huron, Mich, 1,201.64 tons gross, 911.04 net, No. 130,669; Morning Star, Grand Haven, Mich., 80.19 gross, 40.10 net, No. 92,597; Rainbow, Erie, Pa., 15.91 gross, 7.96 net, No. 111,064; Elsa M., Milwaukee, 14.34 gross, 7.17 net, No. 136,455.

A British chart covering Lake Superior entire, including north shore, can be had from the MARINE REVIEW for $1.

## Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on July 16, 1894:

| | Wheat, bu. | Corn, bu. |
|---|---|---|
| Chicago | 17,021,000 | 1,418,000 |
| Duluth | 4,321,000 | ..... |
| Milwaukee | 889,000 | ..... |
| Detroit | 1,106,000 | ..... |
| Toledo | 1,454,000 | 43,000 |
| Buffalo | 1,473,000 | 235,000 |
| Total | 27,815,000 | 1,696,000 |

At the points named there is a net decrease for the week of 1,581,000 bushels of wheat and 385,000 bushels of corn.

## Around the Lakes.

In a few days the last vessel which will be built by Capt. James Davidson for some time will be launched. It is a duplicate of the steamer Nicaragua, launched from the same yard last week.

Delay in receiving the Ward water tube boilers from Charleston, W. Va., may prevent the owners of the fast river steamer Unique from putting her into commission for probably a month to come.

Smith, Davis & Co., Buffalo insurance men, are reported as estimating, roughly, that there is over $20,000,000 worth of vessel property on the lakes this year on which there has not been placed a dollar of insurance.

Capt. Alfred C. Chapman, master of the steamer Briton, Menominee Transit Company, and Miss Lavina Richards were married on the 15th inst. at the home of the bride's mother, 210 Beach street, by Rev. J. D. Jones.

Capt. George Gain, whose death was announced from Port Huron a few days ago, was in command of schooners of the Corrigan fleet for several seasons past. During a part of the present season he was mate of the steamer

It is again announced that the new general chart of Lake Superior, as well as a third new chart of St. Mary's river, containing the new Hay Lake channel and other improvements, will be issued within a few weeks from the office of Gen. Poe, Detroit.

Chief Harrington of the weather bureau and Norman B. Conger, principal officer of the service on the lakes, have gone to Lake Superior, and will spend some time on the north shore. The accummulation of data regarding currents is said to be the object of the trip.

Although the light-house inspector in charge of St. Mary's river buoys decided to place a red spar in position to mark the upper (western) end of Vidal shoal, about one mile above the canal, where the Mariposa struck some time ago, it was reported a few days ago that the upper end of the shoal had not yet been marked.

Senator McMillan of Michigan will certainly secure in amendments to the sundry civil appropriation bill $20,000 for a light on North Manitou island and $21,000 for a light at Death's Door passage, both Lake Michigan, but the light-house board refused to recommend an appropriation for Crisp's point, Lake Superior, for which no light has as yet been authorized.

The McMyler Car-Dumping Machine Company is the name of the corporation organized to manufacture machines of the kind recently erected at Ashtabula by Pickards, Mather & Co. of Cleveland, for loading vessels by taking up and dumping full cars of coal without shoveling or the use of buckets in any way. John McMyler of the McMyler Manufacturing Company, Cleveland, is the patentee of the machine.

As it passed the senate, the naval appropriation bill carried $25,415,080, but not one cent of this is for new vessels. Provision is made for the construction of three torpedo boats with $450,000 appropriated in 1889 for a dynamite cruiser. New ships are not provided for by congress on the ground, first, that by 1896 the thirteen cruisers now in course of construction would be completed and would furnish a very respectable navy; and, second, that in the present depressed condition of business and in the existing state of the treasury finances it was desirable to keep down expenses.

Henry Penton, constructing engineer of the Frontier Iron Works, Detroit, has returned from a trip made to the coast of Massachusetts with the new United States light-ship No. 58, built by the Craig Ship Building Company, Toledo, and engined by the Frontier works. The trip was made via. the St. Lawrence and was of three weeks' duration, as the vessel's power is limited and the weather was thick nearly all the time. Commander Green of Boston, light-house inspector of the second district, pronounced No. 58 the best equipped light-ship in the possession of the government.

An ash ejector, upon which Frank E. Kirby of the Detroit Dry Dock Company has secured letters patent, is described among patents elsewhere in this issue.

## Grand Canal Power House.

In a few days bids will be opened in Detroit for a structure connected with the new St. Mary's Falls canal lock that will be a feature of the entire canal project. When estimates were first made about seven years ago on the new lock, an item of $75,000 was included for a power house and canal office building. With the changes made in original plans, the power house portion of them has been revised, however, and the structure for which bids are now asked will, on account of elaborate proportions commensurate with other parts of the work, represent a cost considerably in excess of that first contemplated. The building will be of stone, nearly square, and of four stories, and a tower 120 feet high in the southwest corner will add greatly to its appearance. This building will, in fact, be the crown and completion of the lock, and will be made so much a part of the whole work as to represent to the public the design and substantial workmanship contained in the masonry below it where the main cost is involved.

The lower story of this building, or the space between the lower and upper canal levels, will be about 22 feet up and down and will contain hydraulic machinery connected with the operation of the canal. The second story will contain the offices now located in the frame office building on the north side of the present lock—such as superintendent's office, post office, telegraph office, a large waiting room for the public, etc. On the next or third floor will be the engineer offices, which include those of the general superintendent and others connected with work coming directly under the charge of the army engineer corps. On this floor there will be room also for other scientific departments of the government—the weather bureau, for instance—that may require quarters. The fourth floor will be a reserve part of the building and will not be furnished until required through any additional service that may be rendered at the canal.

As a safeguard in cases of emergency the power house will be equipped with a large Worthington pumping plant, and by an ingenious arrangement whereby the chimney for the steam part of this plant is located within the big tower it will not be seen.

## Ship Building Statistics.

The following table shows the number and tonnage of vessels built in the United States and officially numbered by the bureau of navigation, treasury department, during the quarter ended June 30, 1894:

| | STEEL.* | | IRON.* | | WOOD. | | | |
|---|---|---|---|---|---|---|---|---|
| | STEAM. | | STEAM. | | STEAM. | | SAIL. | |
| | No. | Gross Tons. | No. | Gross Tons. | No. | Gross Tons. | No. | Gross Tons. |
| Atlantic and Gulf | 6 | 8,709.35 | 3 | 1,819.20 | 39 | 5,181.52 | 166 | 9,877.45 |
| Pacific | ..... | ..... | ..... | ..... | 6 | 1,984.00 | 23 | 567.86 |
| Great Lakes | 6 | 10,155.84 | ..... | ..... | 26 | 5,881.84 | 10 | 2,992.72 |
| Western Rivers | 3 | 170.17 | ..... | ..... | 16 | 1,163.33 | ..... | ..... |
| Total | 15 | 19,035.36 | 3 | 1,819.20 | 87 | 14,210.69 | 199 | 13,438.03 |

*No steel or iron sail vessels.

| Totals for quarter ending June 30, 1894. | No. | Gross Tons. |
|---|---|---|
| Total Steam | 105 | 35,065 25 |
| Total Sail | 199 | 13,438.03 |
| | 304 | 48,503.28 |

| Totals for quarter ending March 31, 1894. | No. | Gross Tons. |
|---|---|---|
| Total Steam | 59 | 13,739.63 |
| Total Sail | 61 | 7,126,19 |
| | 120 | 20,865 82 |

It will be noted that although ship building has been very dull on the lakes, the tonnage of steel and wooden steam vessels constructed in lake ship yards during the last quarter is greater than that of the Atlantic coast.

## St. Lawrence River Buoys.

In answer to the claim of masters of steamers of the Ogdensburg Transit Company, that buoys in St. Lawrence river, vicinity of Cross-Over light, are misleading as at present placed, Commander James G. Green, inspector of the tenth light-house district, says: "The buoys as they are now placed mark the safest channel for vessels of all classes, and were placed after a thorough and careful examination of the locality. I made a personal examination at the same time, and consider the present location of the buoys the safest and best. The recently discovered obstructions in the old channel made that channel dangerous for deep-draught vessels, and the present channel is equally convenient with plenty of room. All the channels of the St. Lawrence river are very much straighter and easier to navigate than either the Detroit or St. Mary's river, and the steamers very much smaller and easier to handle. The change is simply a change of channels, made necessary by the many dangers of the old channel, and for the safety of vessels, which is the sole aim of the light-house service."

PHOTOGRAPHS of sixteen lake steamers and two color plates will be mailed to any address for 50 cents. MARINE REVIEW, 516 Perry-Payne Bldg., Cleveland, O,

## Application for Master's Berth.

Some of the old time skippers who have of late been heard to remark that the lake vessels of today are sailed from the offices of the Perry-Payne building, Cleveland, or by the representatives of railway companies occupying similar quarters in the office buildings at Buffalo, might be prompted to the use of slightly disrespectful language if they were asked to fill out some of the applications for master's berth now said to be in vogue in England. As a sample of the extremes to which blank forms attending these applications are carried, a London exchange makes the following extracts from one of them, which may, however, have been prepared for print, more so than actual service:

Give full Christian and surname, age last birthday, address, and state whether married or single.

Are you in position to deposit $500 if required?

Give the names of all the firms in whose employ you have been as master in order of employment, stating in what years you were with each firm.

Give the names of the steamers you have commanded in the order of command. State in proper order why you left your different employers.

Has there been an accident of any kind to any sailing-ship or steamer on board which you have been either as officer or master? If so state the nature and particulars of such accident and who was in charge of the watch at the time.

What wages per month did you receive in each employ? Did you get a bonus in addition? If so how much?

Have you been accustomed to victual the crew? If so state what you were allowed per man per day? Were the officers, engineers, and crew always satisfied with the food you provided?

Are you a total abstainer? If so, how long have you been so?

Has there ever been any question as to your sobriety on board any vessel or steamer under your command?

Have there ever been any disputes between yourself and any of the officers under you?

Have you been accustomed to conduct ship's business in port? More especially in the direction of getting good towage, despatch, and economy?

Give particlars of claims, if any, for short delivery or damage to cargo while you were mate or master.

Did you enjoy good health? If you ever had any illness state nature and date.

What is your temperament—Cool, quick-tempered,sensitive,or sulky?

Do you consider yourself to be energetic and pushing?

Are you interested either as part owner or shareholder in any steamer or steamship company?

Are there any other material circumstances which in applying for a command you consider right should be known to us? If so state particulars.

N.B.—You are not obliged to answer all these inquiries unless you wish to do so, but it is desirable to give the fullest possible particulars, and all information given will be treated as strictly confidential.

## Record Cargoes in Both Grain and Ore.

In iron ore as well as grain, the steamer Selwyn Eddy, built by the Detroit Dry Dock Company for Eddy Bros. of Bay City, now holds the record for large cargoes carried through the rivers. The actual weight of the big cargo of ore belonging to the Platt Mining Company, which the Eddy delivered at Ashtabula Harbor on Saturday last, as reported by J. H. Outhwaite & Co., of Cleveland, agents of the ore company, is 3,897 gross tons, and the bill-of-lading weight, which represents a deduction of one per cent. for moisture, on which the vessel receives no freight, was 3,858 gross. Reference to the record of large cargoes, printed elswhere in this issue, will show that the Eddy is also at the head of the list among the grain carriers, and that the steamer S. S. Curry, which held the record previously for large loads of ore carried through the rivers, is credited with 3,852 gross tons, actual weight.

The first cargo of the new steel steamer Kearsarge from Lake Superior, delivered at the Nypano dock, Cleveland, on Monday, amounted to 3,061 gross tons.

## World's Record for Speed of War Ships.

As had been expected, the new Uuited States cruiser Minneapolis, which was illustrated and described in the last issue of the REVIEW, has swept the seas of all previous records for large vessels of war. On her official trial, Saturday, over a course of nearly eighty-eight nautical miles on the Massachusetts coast, her average speed was 23.05 knots, and in one spurt of about eight miles she attained a speed of 25.42 knots. As a result of the average speed of of 23 knots her builders, the William Cramp and Sons Ship and Engine Building Company of Philadelphia, will receive a bonus of $400,000, as 21 nautical miles an hour were required by the contract, and for each quarter of a knot above that figure the builders were to be paid $50,000.

Jay C. Morse of Chicago is in Europe.

## Apparatus for Submarine Work.

Through illustrations printed in the Engineer's Gazette of London an opportunity is presented for describing some of the apparatus used in submarine work on the other side. A self-contained diving suit adapted to certain kinds of deep water work is shown in Fig. 1. The diver using this suit breathes his own breath over and over again, the breath at each respiration being passed through a filter, which takes away its poisonous properties, and revivifies it with its complement of oxygen from a chamber containing oxygen under pressure, thus giving the diver a regular supply of pure air. It entirely dispenses with the use of air pumps and tubes. It is simply the ordinary helmet and water-proof dress, with a small metal knapsack worn on the back of the diver, and connected to the back of the collar by curved copper pipes and gun-metal unions. The knapsack is a copper cylinder containing 4 cubic feet of oxygen gas, at a pressure of sixteen atmospheres. Attached to the side of the cylinder is a copper box, 12 inches square by 4 inches deep, fitted with metal lid, wing nuts and screws, and a lining of vulcanite, in which is the filtering medium, consisting of granulated india rubber, interspersed with 2 pounds to 3 pounds of caustic soda, 1 pound being sufficient for four hours' use. The respirator fits air-tight over the mouth and nose of the diver, and is connected with the knapsack by a short flexible pipe, fitted with a light inlet valve. The exhaled breath returns to the helmet completely purified. The dress, containing air, acts as a diaphragm, and the pressure is self regulating at any depth.

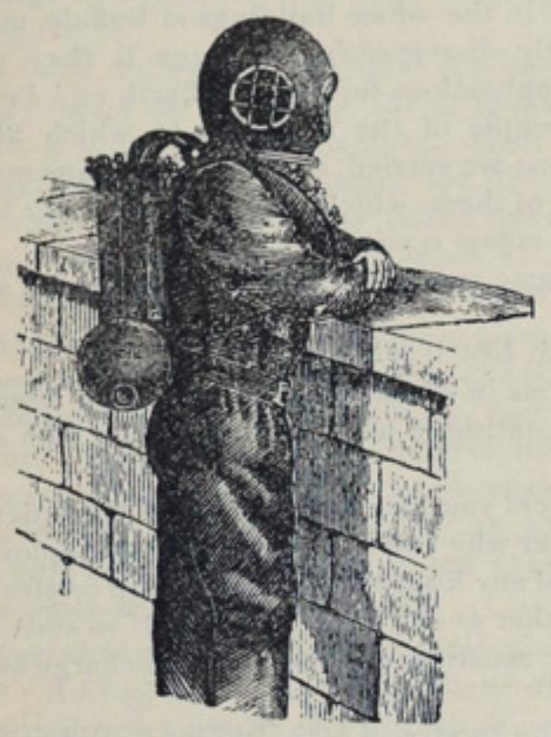


FIG. 1.—SELF-CONTAINED SUIT.

But for extensive jobs of deep water work the apparatus supplied with air from above and having signal connections, is, of course, most important. The diver, with his attendants and all the mechanism for enabling him to snap his fingers at the decree of nature which made him a land animal, is clearly and fully shown in Fig. 2. With this apparatus the diver can remain under water for a great length of time, but the instant he comes to the surface it is necessary to remove the helmet and weights. While under water the burden is not felt, being counteracted by the buoy-

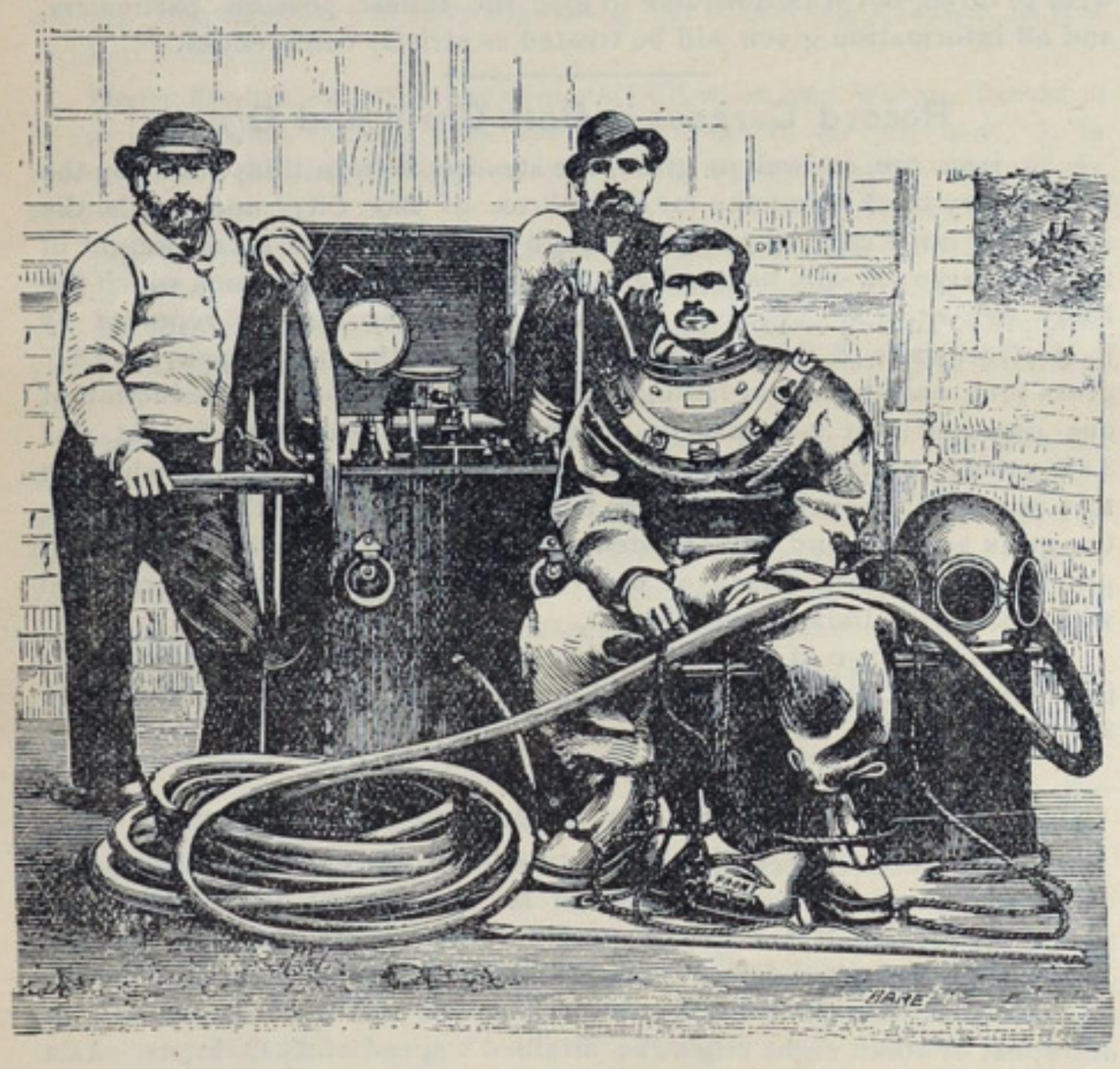


FIG. 2.—MODERN DIVING APPARATUS.

ancy of his inflated dress. The back and front weights have gun metal shackles attached to the upper parts, and are hung on two pins fixed into shoulder or breast-plate when in use, and can be instantly lifted out of their place and disconnected. In addition to signalling by cords, complete telephonic communication is made applicable.

The helmet with its attachments, which is a very important part of the suit, is shown in Fig. 3, front and rear views. The arms are left very free, and can even be raised well over the head. The air pipe is attached to the union joint at the back of the helmet, and is fitted with a stop valve, so that if the air pipe is damaged the valve automatically closes and shuts the air in the dress, and there is sufficient air for the diver till he gets to the surface. The air as it enters is broken into three flat air passages, which cross over and end just above the glasses, inside the helment, so that a flat stream of fresh air is continually removing the condensed

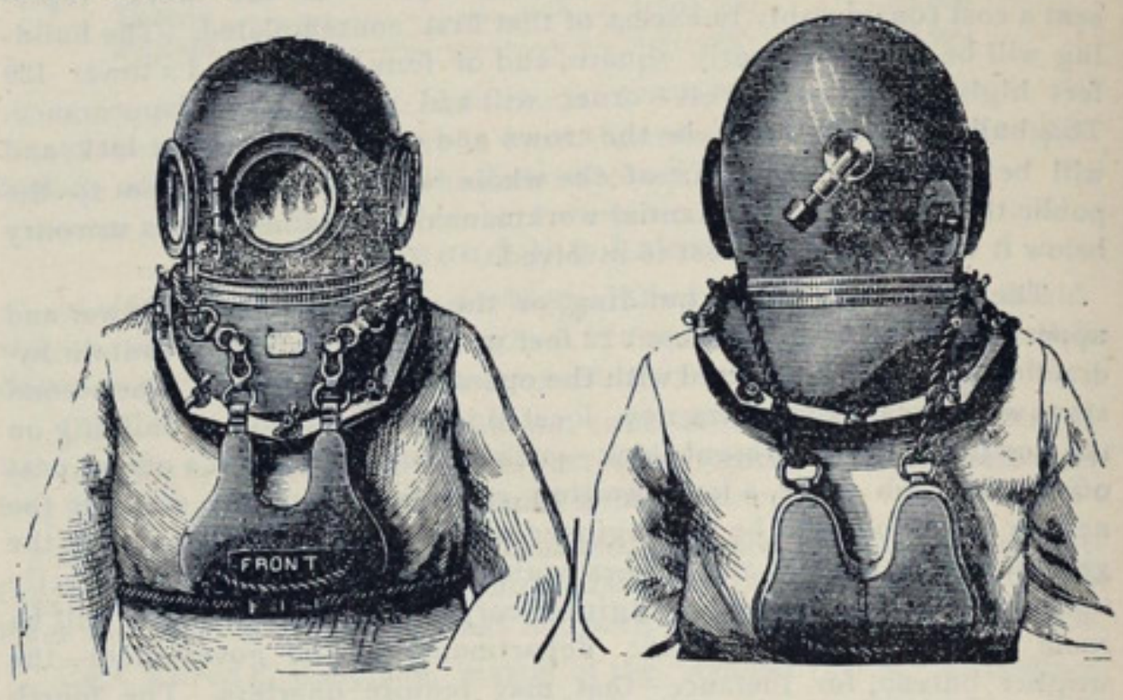



FIG. 3.—FRONT AND REAR VIEWS OF HELMET.

breath from the glasses, and thus keeping them transparent. Should the diver have to come to the surface for a moment he can do so with moderate speed, by placing his finger on the adjusting valve, when the air, having no escape, inflates his dress and he rises in a straight line upwards, clutches the side of an enbankment or a holdfast in the side of the diving barge, and opens the front eye himself, gives the desired information or instruction, closes the eye and again descends, the valve continuing self-acting. The adjusting valve used is, in some cases, dangerous, unless in the hands of a very cool, experienced diver. A man not accustomed to diving, if affected with nervousness, would be liable to turn his valve in the wrong direction, which would increase this feeling, and might end fatally. The valve shown here, however, while enabling the diver to raise himself in case of illness, without signalling his attendant, immediately rights itself. The front eye was formerly fastened with a screw, but now swings on a hinge joint, and has a vulcanized india-rubber seat, so that instant relief is given to the diver, without any possibility of jamming or failure.

## Care of Sick and Disabled Seamen.

Walter Wyman, supervising surgeon-general of the United States marine hospital service, announces the following contracts at lake ports for the care of seamen entitled to relief from the service during the fiscal year beginning with the 1st inst.:

Ashtabula, O.—Medical attendance to be furnished by an acting assistant surgeon; Mrs. Henry Whelpley to furnish quarters, subsistence and nursing at $1 per day; contagious diseases, $1.50 per day; John Ducro & Sons to provide for burial of deceased patients at $14 each. Patients requiring long-continued hospital treatment will be furnished transportation to the United States marine hospital at Detroit, Mich.

Buffalo, N. Y.—Medical attendance by a medical officer of the marine hospital service; the Buffalo hospital (Sisters of Charity) to furnish quarters, etc., and medicines, at 80 cents per day; contagious diseases, at $2 per day; and to provide for the burial of deceased patients at $10 each.

Cleveland, O.—Medical attendance by an officer of the marine hospital service; the Cleveland City Hospital Association to furnish quarters, etc., and medicines in the United States marine hospital, under lease of Sept. 21, 1875, at 64 cents per day. The hospital to be kept in repair by the association; Flynn, Abel & Froelk to furnish ambulance service at $2 for each patient, and to provide for the burial of deceased patients at $17 each.

Chicago, Ill.—Hospital patients to be cared for in United States marine hospital; H. Bartlett to provide for the burial of deceased patients at $17.50 each.

Detroit, Mich.—Hospital patients to be cared for in the United States marine hospital; out-patients to be treated at the dispensary, No. 90 Griswold street; Frank Gibbs & Co. to provide for the burial of deceased patients at $7.90 each.

Duluth, Minn.—Medical attendance by an acting assistant surgeon; St. Luke's hospital to furnish quarters, etc., and medicines at 85 cents per day; John W. Stewart to provide for the burial of deceased patients at $15 each.

Erie, Pa.—Medical attendance by an acting assistant surgeon; Hamot

Hospital Association to furnish quarters, etc., and medicines at 85 cents per day. Care and treatment of cases of contagious diseases by the health department of the city of Erie at $2.85 per day; W. J. Quinn to provide for the burial of deceased patients at $18 each.

Escanaba, Mich.—Medical attendance by an acting assistant surgeon; Delta County hospital to furnish quarters, etc.. at $1 per day.

Grand Haven, Mich.—Medical attendance by an acting assistant surgeon; Nancy Palmer to furnish quarters, etc., at $1 per day.

Green Bay, Wis.—Medical attendance by an acting assistant surgeon; St. Vincent's hospital to furnish quarters, etc., and medicines at $1 per day; contagious diseases, $3 per day.

Ludington, Mich.—Medical attendance by an acting assistant surgeon; Hanibal D. Linsley to furnish quarters, etc., at $1 per day.

Manistee, Mich.—Medical attendance by an acting assistant surgeon; Mercy hospital to furnish quarters, etc., and medicines at 90 cents per day.

Marquette, Mich.—Medical attendance by an acting assistant surgeon; St. Mary's hospital to furnish quarters, etc., at $1 per day, and to provide for burial of deceased patients at $15 each.

Michigan City, Ind.—Medical attendance by an acting assistant surgeon; seaman requiring hospital treatment must make application at the United States marine hospital at Chicago, Ill.

Milwaukee, Wis.—Medical attendance by an acting assistant surgeon; St. Mary's hospital to furnish quarters, etc., and medicines at 80 cents per day; George L. Thomas to provide for the burial of deceased patients at $15 each. Chronic hospital patients to be furnished transportation to the United States marine hospital at Chicago, Ill.

Ogdensburg, N. Y.—Medical attendance by an acting assistant surgeon; the city hospital to furnish quarters, etc., and medicine at $1.25 per day; L. McGillis to provide for the burial of deceased patients at $15 each.

Oswego, N. Y.—Medical attendance by an acting assistant surgeon; the Oswego hospital to furnish quarters, etc., and medicines at $1 per day.

Port Huron, Mich.—Medical attendance by an acting assistant surgeon; Hospital and Home to furnish quarters at $1 per day. Patients requiring long-continued hospital treatment will be furnished transportation to the United States marine hospital at Detroit; J. W. Kelly to provide for ihe burial of deceased patients at $8 each.

Saginaw, Mich.—Medical attendance by an acting assistant surgeon; Saginaw hospital to furnish quarters and medicines at 65 cents per day. Patients requiring long-continued hospital treatment to be furnished transportation to the United States marine hospital at Detroit, Mich.

Sandusky, Ohio.—Medical attendance by an acting assistant surgeon; the Good Samaritan hospital to furnish quarters at $1 per day.

Sault Ste. Marie, Mich.—Medical attendance by an acting assistant surgeon; Mrs Mary J. Walker to furnish quarters at 75 cents per day; J. Vanderhook to provide for the burial of deceased patients at $5 each.

Superior, Wis.—Medical attendance by an acting assistant surgeon; St, Francis hospital to furnish quarters, etc., and medicines at 90 cents per day.

Toledo, O.—Medical attendance by an acting assistant surgeon; St. Vincent hospital to furnish quarters, etc., and medicines at 80 cents per day; contagious diseases, $2 per day; and to provide for the burial of deceased patients at $15 each.

At all ports not otherwise specified, the dispensary is located at the custom house or marine hospital.

## In General.

W. A. Carlisle of Buffalo, who has been engaged at Sault Ste. Marie with Dunbar & Sullivan, dredging contractors, fell into the canal Wednesday morning and was drowned.

Collectors of customs will in future take no part in the selection of light-house keepers and assistants. Appointments will be made by naval officers placed in charge of the several districts as inspectors.

Traffic on inland waterways of France during 1893 amounted to 25,504,330 tons, against 25,957,686 tons in 1892. About 32 per cent. of this traffic is in building materials and 28 per cent. in coal, coke and patent fuel.

The Daring, latest of the British torpedo boat destroyers, which a few days ago made 29¼ knots on official trial, is only 185 feet long, but has power equal to the White Star liner Adriatic, a vessel of 3,888 tons, which twenty years ago was the queen of the Atlantic.

It would seem that the Chicago Ship Building Company is to have the contract for the two steel tow barges on which the Mienesota Steamship Company asked for bids some time ago. Definite arrangements for the boats have not as yet been made, but a dispatch from Chicago would indicate that Mr. Babcock feels quite confident of getting the work. The vessels will be of the regular pattern of ships and will carry about 3,000 tons.

## Settlement of the Raft Towing Question.

It is not probable that any change will be made in conference on that portion of the river and harbor bill relating to the towing of rafts on the lakes, and as several changes were made by the senate, the regulations as finally passed by both houses are here reproduced:

"That the towing of logs in what are known as bag or sack rafts on the open waters of the great lakes shall be permitted; but every vessel having a raft in tow shall carry between sundown and sunrise, in addition to the colored signal lights prescribed by treasury regulations, two white lights showing all around the horizon not less than 8 feet apart and in a horizontal line, and at least 20 feet above the deck; that for use in thick or foggy weather said vessel shall carry what is known as a screeching whistle, to be sounded under the same rules and regulations for giving fog signals as are now in force upon steamers having tows, the use of such screeching whistles upon vessels not having rafts in tow being declared illegal except for fire or police boats engaged in their duties as such; and that each failure to display said lights or to sound said whistle shall constitute a separate offense, punishable as hereinafter provided for. It shall be the duty of every vessel towing a raft to give at least half the channel way wherever the width of channel will permit to vessels passing in the same or an opposite direction, and each failure to thus give way when practicable shall constitute an offense punishable as hereinafter provided for. It shall be the duty of every vessel having a raft in tow to avoid running over or against government buoys, stakes, or other channel marks wherever and whenever practicable; and the willful destruction or displacement of any of said buoys, stakes, or other channel marks shall constitute an offense, punishable as hereinafter provided for; and furthermore, in case of the unavoidable destruction or displacement of any of said buoys, stakes, or other channel marks it shall be the duty of the master or other person in charge of said towing vessel to report the fact to the light house inspector of the district by telegraph, if possible, and if not possible, then by mail or otherwise, at the earliest practicable moment.

"When any vessel and its tow of logs in bag or sack rafts are obliged by stress of weather to take refuge between entrance piers, or in any narrow channel of a river or harbor, the burden of proof as to the necessity of so taking refuge being upon the towing vessel, the raft shall be at once reconstructed so as to leave at least half the channel way clear, and the whole raft shall be moved as soon as possible out of the way of passing vessels; and each and every period of twenty-four hours after the first twenty-four hours that said raft shall be left in shape to obstruct navigation shall constitute a separate offense, punishable as hereinafter provided for.

"For entering and navigating all harbors with narrow channels, all rivers navigated by vessels other than rafting tugs, except in the rivers St. Mary, St. Clair, Maumee, Detroit and Niagara, said harbors or rivers being on or connecting with any of the great lakes, and for entering or passing through the Portage lake ship canals across Keweenaw point, Michigan, logs shall be made into crib rafts and be held together by frequent cross sticks, chains, or cables; shall be handled by two tugs of sufficient power to properly control them. Each failure to comply with this restriction shall constitute an offense punishable as hereinafter provided for. The provisions and restrictions of this act with reference to the character, size, and construction of rafts, and methods of towing shall not apply to those portions of the waters of Lake Superior bordered by the States of Wisconsin and Minnesota. Raft towing through either the Hay lake channel or the St. Clair flats canal shall be entirely prohibited under penalty as hereinafter provided for.

"On the St. Mary's river between Sault Ste. Marie and the head of Mud lake, at a point two miles below the position of the Encampment crip light, rafts shall be securely fastened by cross ties, or otherwise, to preserve, as far as possible, a uniform width; each raft shall be handled by not less than two tugs of sufficient power to keep the raft under control and to move it as far as possible to one side of the channel sufficiently to permit vessels to pass; and each failure to comply with this restriction shall constitute an offense punishable as hereinafter provided for.

"On the St. Clair, Maumee, Detroit, and Niagara rivers, rafts shall not exceed in length 2,200 feet, nor in width 200 feet; they shall be securely cross-tied to preserve uniform width; and each failure to comply with this restriction shall constitute an offense punishable as hereinafter provided for. For the willful violation of any of the foregoing restrictions the towing vessel shall be liable to a fine of not less than $100 and not more than $1,000; and the master or other person at the time in charge of the towing vessel shall be imprisoned for not less than one month and not more than six months for each offense, at the discretion of the United States court having jurisdiction; and in addition to the penalties thus imposed the towing vessel shall be liable at civil action for damages occurring as a result of said willful violation of these regulations.

"ROPER'S LAND AND MARINE ENGINES," BOUND IN MOROCCO WITH FLAP AND POCKET, WILL BE MAILED TO ANY ADDRESS FOR $3.50 SENT TO THE MARINE REVIEW, CLEVELAND, O.

# MARINE REVIEW.

*DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.*

Published every Thursday at No. 516 Perry-Payne building, Cleveland, O. Chicago office, (branch), No. 726 Phoenix building.

SUBSCRIPTION—$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, 75 cents. Advertising rates on application.


The books of the United States treasury department contain the names of 3,761 vessels, of 1,261,067.22 gross tons register in the lake trade. The lakes have more steam vessels of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The number of steam vessels of 1,000 to 2,500 tons on the lakes on June 30, 1893, was 318 and their aggregate gross tonnage 525,778.57; in all other parts of the country the number of this class of vessels was, on the same date, 211 and their gross tonnage 314,016.65. The classification of the entire lake fleet on June 30, 1893, was as follows:

| Class. | Number. | Gross. Tonnage. |
|---|---|---|
| Steam vessels | 1,731 | 828,702.29 |
| Sailing vessels | 1,205 | 317,789.37 |
| Canal boats | 743 | 76,843.57 |
| Barges | 82 | 37,731.99 |
| Total | 3,761 | 1,261,067.22 |

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

| | Number. | Net Tonnage. |
|---|---|---|
| 1889 | 225 | 107,080.30 |
| 1890 | 218 | 108,515.00 |
| 1891 | 204 | 111,856.45 |
| 1892 | 169 | 45,168.98 |
| 1893 | 175 | 99,271.24 |
| Total | 991 | 471,891.97 |

ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

| | St. Mary's Falls Canal. | | | Suez Canal. | | |
|---|---|---|---|---|---|---|
| | 1893 | 1892. | 1891. | 1893. | 1892. | 1891. |
| No. vessel passages | 12,008 | 12,580 | 10,191 | 3,341 | 3,559 | 4,207 |
| Ton'ge, net regist'd | 9,849,754 | 10,647,203 | 8,400,685 | 7,659,068 | 7,712,028 | 8,698,777 |
| Days of navigation.. | 219 | 223 | 225 | 365 | 365 | 365 |

*Entered at Cleveland Post Office as Second-class Mail Matter.*

VESSEL masters trading to Lake Superior are again signing a petition, this time to the Lake Carriers' Association, asking that the government be urged to purchase the private dock property at the eastern approach to St. Mary's Falls canal. As it has been claimed that owners of this property have held it at a high price, on the supposition that the government would be compelled eventually to purchase from them, the vessel owners of the lakes have at no time taken a decided stand in directing attention to the inconvenience to which they are subjected on account of this stretch of river front in the most important portion of the lower approach to the locks not being controlled by the government. Now that the big new lock is nearing completion, however, it would seem that the subject should at least be investigated by the Lake Carriers' Association upon being submitted from vessel masters who are signing the petition. This stretch of dock frontage, which lies between the locks and other property and docks owned by the government, is controlled largely by a corporation known as the Union Dock and Coal Company, and all vessels bound up through the locks must first tie to the lower section of government piers and then work their way around such craft as may be tied to the private piers in the best manner possible. When the wind is heavy from the east, this movement of ships is attended by considerable danger of collision and loss of time, as well as tug hire in some cases. These conditions are explained in the petition referred to, and it is urged that as great sums of money have been expended in building the locks and other parts of the canal for the free use of all vessels, this eastern approach should also be made entirely free.

FIFTEEN LEADING vessel owners on the lakes could, if they saw fit, obtain profitable rates for carrying coal, by a simple agreement to take no coal below a reasonable fixed rate. Take, for instance, a list made up of such well known men as Thomas Wilson, M. A. Bradley, Alex. McDougall, J. J. H. Brown, M. M. Drake, A. A. Parker, D. C. Whitney, Wiley M. Egan, David Vance, H. A. Hawgood, John Mitchell, W. C. Richardson, James Corrigan, J. C. Gilchrist and John W. Moore. Regardless of what anyone else in the vessel business might do, these owners by demanding fair rates on coal to both Lake Michigan and Lake Superior could command the situation, and it must be admitted that in view of conditions that have ruled in the coal carrying business for two or three seasons past they would be justified in entering into such an agreement. This does not, of course, take into account the ore companies owning a large number of steel vessels, but these vessels are in the ore carrying trade almost exclusively, and would not be put to carrying coal except under extreme conditions. In almost every other line of trade in this country excepting the vessel business some method of meeting undue competition is found when business is being done at a loss.

FOR SOME time past the United States steamer Michigan has been engaged upon a survey of the Detroit river in the vicinity of Amherstburg and Bois Blanc island. The Michigan's time is not valuable, and little interest is taken in any work at which she may be employed, but why the navy department, and presumably the hydrogaphic branch of it, should spend time in going over lake channels that were constructed by army engineers and fully sounded and swept many times over is a mystery. It is fully evident that the desire for shore duty on the part of naval officers is bringing to the lakes another class of government officials, whose influence in Washington will cause appropriations to be made for work of a scientific kind that is far from being as necessary as many channel improvements, lights, etc., that will be delayed, as long as money is being diverted to other purposes.

REFERRING to the action of William H. Webb, who has founded a home and academy for ship builders in New York, Industry of San Francisco says: "Technical people, to use a general term for the skilled in mind and hands, are singularly behind in means of looking after worthy indigent people of their callings. None need it more and none deserve it so much. We know just now of a most worthy man over eighty years old, whose contributions to the wealth of this country can be counted in millions, seeking a place in the Mechanics' Home at Philadelphia. We do not know what this home is, but it is the only mechanics' home we have heard of. More such institutions and less universities and colleges would be a worthy change for a time."

THE SUGGESTION that an effort be made now to have the present lock in St. May's Falls canal increased to 20 feet depth immediately upon the completion of the new 800-foot lock may not meet with approval, on account of the depressed condition of finances throughout the country, but it is certain that the necessity for such an improvement will be apparent before the new lock is finished with the close of next year. It may be that the idea generally advanced, viz., that of having small vessels and vessels without cargo pass through the present lock, will prevail for a short time after the completion of the new structure, but a second lock of full depth will undoubtedly be an absolute necessity within the next five years.

IT WOULD seem that the managers of Duluth coal docks have taken a short-sighted view of the future of lake freights in not causing an early settlement of the trouble with workmen on the docks. Admitting that a settlement of the strike was based on the demand for 50 cents an hour by the men who unload vessels, the difference of ten cents an hour would amount to but about 2½ cents a ton. July would have been a month favorable for shipments to the head of the lakes at low freights, and it is certainly reasonable to expect that the freight rate later in the season on coal that might have been shipped this month will be ten cents a ton higher, or four times as great as the difference in wages demanded by the men.

CLEVELAND'S chamber of commerce has appointed a committee to bring to the attention of the municipal board in charge of the equalization of taxes the recent report of the commissioner of navigation, in which the great excess of taxation of vessel property in Cleveland was pointed out. It would seem that the better way for Cleveland, as well as other large lake ports, to proceed in this matter would be through the state legislatures. Membership in local equalization boards changes frequently, and one of the great aims of such boards is to make additions to the amount of property listed for taxation.

THE RAILWAY REVIEW calls us to account for referring to South Chicago as if it were not part of the City of Chicago. The error, if such it may be, was not made without a knowledge of the facts. The intention in referring to the need of improvements in Chicago harbor proper was to stir up the great coal, grain and lumber interests of the main harbor to a realization of the fact that the City of Chicago as a whole has of late been disposed to look upon its shipping in a secondary way when railway bridges and other obstructions in the river are under consideration.

IT IS UNFORTUNATE that appropriations for worthless schemes are often made in river and harbor bills, in order to secure the votes of members of congress who have no direct interest in waterways and harbors that are of commercial value. In the river and harbor bill that has just passed both houses a prominent item of this kind is the one in which $20,000 is appropriated for surveying proposed routes for a ship canal through Ohio from Lake Erie to the Ohio river. This would be a good item to eliminate from the bill in conference.

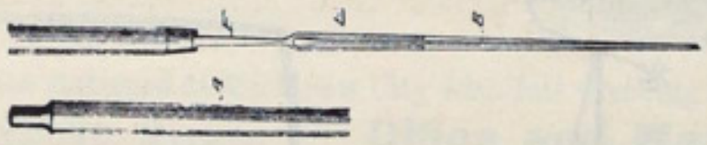
## Illustrated Patent Record.

SELECTED ABSTRACTS OF SPECIFICATIONS OF A MARINE NATURE—FROM LATEST PATENT OFFICE REPORTS.

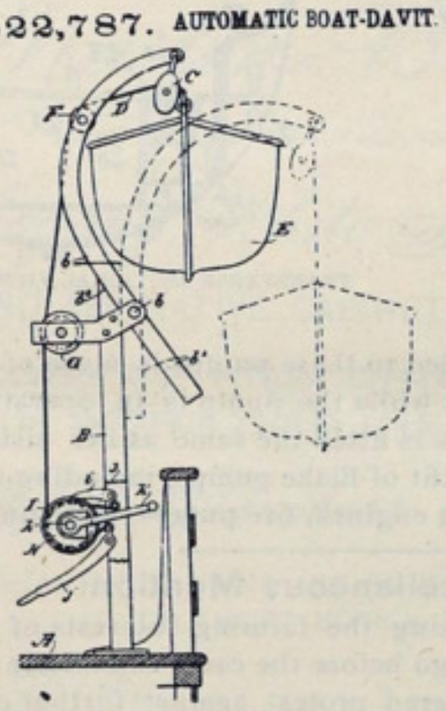
**522,119. ASH EJECTOR. Frank E. Kirby, Detroit, Mich., assignor to the Detroit Dry Dock Company, same place. Filed Mar. 14, 1893. Serial No. 465,966.**

Claim. First, in an ashes ejector, the combination of a hopper having sides at right angles with each other, and an opening in the lower corner, of a chamber of greater area than said opening connected with said hopper, a nozzle adapted to deliver a stream of water centrally through said chamber close to the corner of said hopper, and a straight pipe leading from said chamber outboard. Second, in a device for removing ashes from a ship's fire room, the combination of the ejector G, having a nozzle *h*, opening *f* and counterweighted valve F, and means for forcing a stream of fluid through said nozzle, with the hopper E opening into said ejector, a discharge pipe D, and valve *b*. Third, in a device for removing ashes from a ship's fire room, the combination of the ejector G, having a nozzle *h*, means for forcing a stream of fluid through said nozzle, the hopper E opening into said ejector, a discharge pipe D provided at its outlet end with a valve *b*, the opening *f* in the lower side of the ejector, and an outwardly opening valve F normally closing said opening but automatically yielding under the pressure of the water contained in the pipe D to permit its escape therefrom upon the stoppage of the ejector.

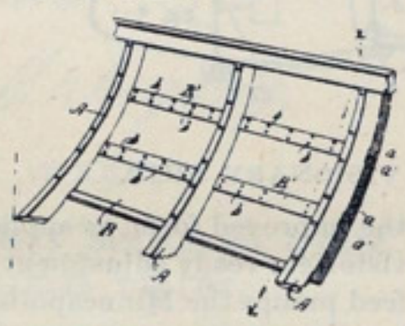
522,201. OAR.



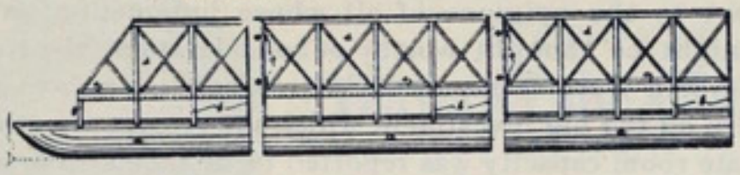
522,787. AUTOMATIC BOAT-DAVIT.



522,630. MARINE VESSEL.



522,348. COMPOUNDABLE SHIP OR BOAT.



**522,201. OAR. William W. Fraker, Alma, Mich. Filed June 28, 1893. Serial No. 479,098**

Claim. An oar consisting of a handle, and blade made separately of wood, and connected by an elastic steel middle part, having a shank at one end inserted into the handle of the oar, and a fork at the other end, between the parts of which fork the blade is secured.

**522,348. COMPOUNDABLE SHIP OR BOAT. Hermann Martini, Leipsic, Germany. Filed Aug. 9, 1893. Serial No. 482,730.**

Claim. A compoundable ship or boat, composed of several long floating bodies united by a deck fixed above them and of stiffening trusses or frames, which are erected on the top of all or some of the floating bodies, the said ship or boat being made in sections in the longitudinal direction and capable of being built up or taken to pieces, and of being lengthened or shortened at pleasure by adding or omitting some sections.

**522,787. AUTOMATIC BOAT DAVIT. Frank Ench, Hugo Fuegel, and John L. Cooke, Oakland, and Gustav F. W. Schultze, Berkeley, Cal.; said Cooke assignor of one-half his rights to John Dolbeer, San Francisco, Cal. Filed Aug. 14, 1893. Serial No. 483,125.**

Claim. Boat davits consisting of the lower fixed sections and the swinging upper sections jointed thereto at a point intermediate of the overlapping ends of the two sections, and limited by stops formed by an extension of each section, in combination with the blocks of the upper sections, the hoisting lines or falls suspending the boat from said blocks and guided downwardly, whereby, through the raising and lowering of the boat, the upper sections are swung in and out automatically, a winding shaft with drums to which the lines or falls are attached, a retaining pawl and ratchet by which the winding shaft is held, and a brake applied to said winding shaft to control the descent of the boat.

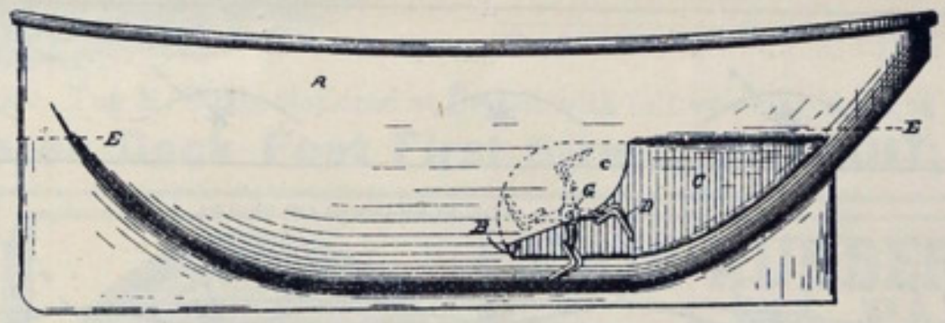
**522,630 MARINE VESSEL. Lewis N. Tonns, Eriastina, assignor of two-thirds to Edward H. Hall, Brooklyn, and George H. Allen, New York, N. Y. Filed May 4, 1892. Serial No. 431,818.**

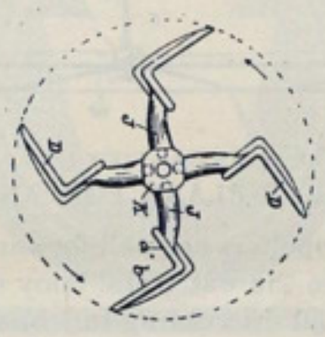
Claim. In a marine vessel, the combination with the sheathing boards and the ribs having recesses, of a thin metallic strip passing through said recesses and riveted over the seam between adjacent boards.

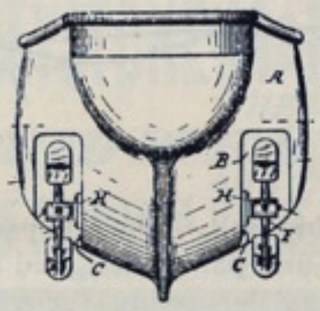
**522,827. PADDLE-WHEEL FOR STEAMSHIPS. Alfred Cooper, Baltimore, Md. Filed Feb. 28, 1894. Serial No. 501,881.**

Claim. First, paddle-wheel for vessels, consisting essentially of a hub provided with four or more radial arms, to which double-angled flukes or blades are attached; the blades consisting of two unequal portions, the shorter or inner end being placed at an angle to the said radial arms, while the outer or longer end is substantially at right angles to the inner end and forms the main driving surface to the wheel. Second, a paddle-wheel for vessels, consisting of a hub provided with radial arms to which double-angled flukes or blades are attached, the blades having two portions at an angle with each other, and reinforced by a rib extending their entire length on the outer exterior surface, which constitutes the working face of said blades when the vessel is advancing through the water.

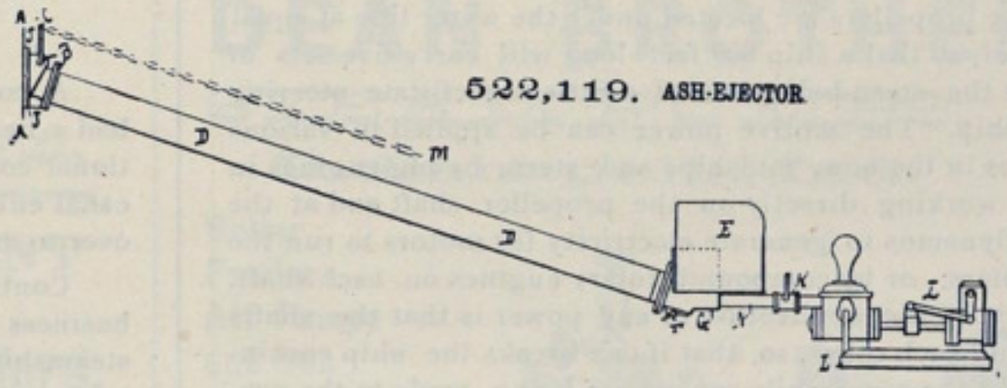
522,827. PADDLE-WHEEL FOR STEAMSHIPS.







522,119. ASH-EJECTOR.



## Speed and Cargo Records.—Lake Freight Boats.

Iron ore.—Maritana, Minnesota Steamship Company of Cleveland, 4,260 gross or 4,771 net tons, Escanaba to South Chicago; Selwyn Eddy, Eddy Bros. of Bay City, Mich., 3,897 gross or 4,364 net tons, Escanaba to Ashtabula; S. S. Curry, Hawgood & Avery Transit Company of Cleveland, 3,852 gross or 4,314 net tons, Esbanaba to Fairport; Kearsarge, Interlake Company of Cleveland, 3,718 gross or 4,164 net tons, Escanaba to Cleveland.

Grain.—Selwyn Eddy, Eddy Transportation Company of Bay City, 130,820 bushels of wheat, Detroit to Buffalo; Centurion, Hopkins Transportation Company of St. Clair, Mich, 147,812 bushels of corn, Chicago to Erie; Onoko, Minch estate of Cleveland, 187,657 bushels oats, Chicago to Buffalo.

Coal.—E. C. Pope, Eddy Bros. of Bay City, Mich., 3,950 net tons anthracite, Buffalo to Chicago.

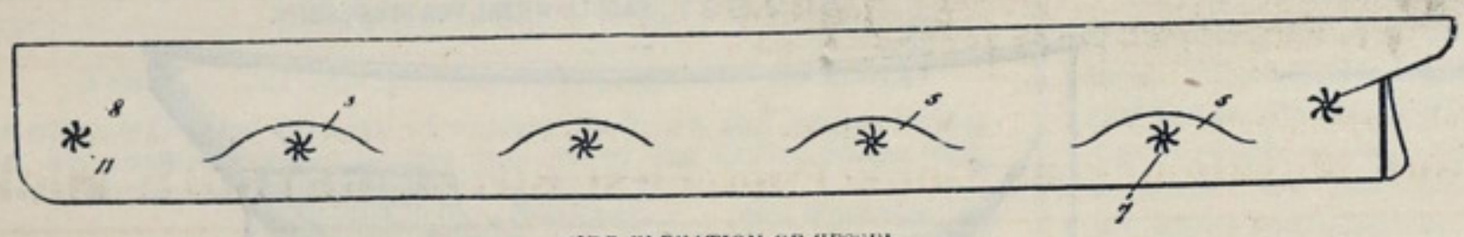
Speed.—Owego, Union Line of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour.

Work is to be resumed at the Brotherton mine, one of the Gogebic range properties which produces a fair amount of very good ore, but which has been idle this season, on account of the low range of prices at which Bessemer ore was sold during the winter.

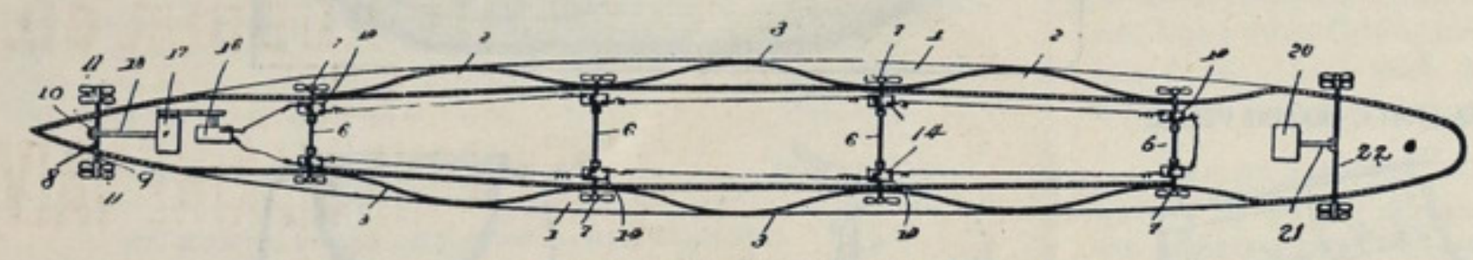
## Another Visionary Ship.

Simply as a curiosity there is presented herewith some drawings and a few details of the plans of Richard B. Painton of Williamsport, Pa., for a vessel that is to cross the Atlantic, according to the inventor's ideas, in three days. Of course, patents on the ship have been taken out in the United States, Great Britain, etc., and the "apparent practicability of the idea has attracted attention the world over." The description, which follows, is given just as it comes from the enthusiastic inventor.

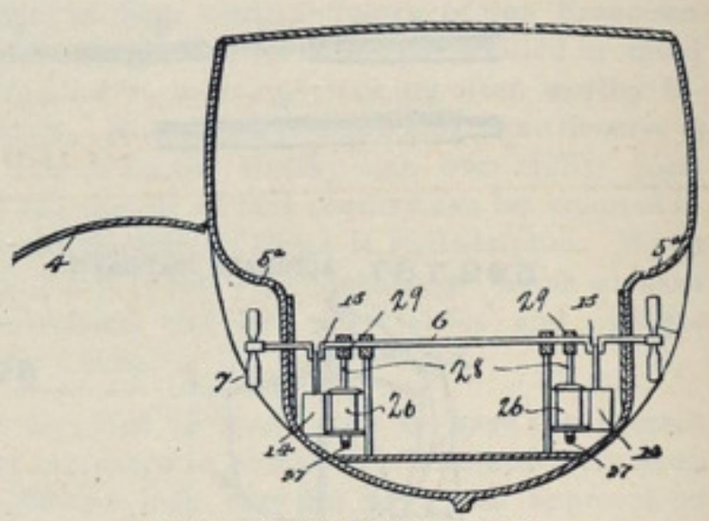
Besides somewhat changing the construction of the hull, the inventor attaches a series of specially designed propellers to the side instead of at the stern of a ship. The propellers are made with two sets of paddles, three in each set, alternately side by side on the same shaft, the blades being so arranged as to fill each dip, and at the same time throw the water away from the sides of the vessel, thus lessening friction. They are attached to the side of the vessel in pairs, that is, on shafts, which run through the vessel crosswise and revolve constantly in dead water in pockets or indentures. These pockets are provided with shutters, which, when closed, form water-tight compartments about the propellers, from which water can be pumped and to which entrance can be made from the hull of the vessel for the purpose of making repairs, if damage occurs to the propellers. When all the shutters are closed the hull has the outline of any ordinary steamship hull. The first pair of propellers are well forward. This location of the first pair is designed to cleave the water and buoy up the bow, the cleaving decreasing the friction and increasing in consequence speed, and the buoying up preventing the ship from "shipping seas," as is frequently the case.



SIDE ELEVATION OF VESSEL.



HORIZONTAL SECTIONAL VIEW.



TRANSVERSE SECTIONAL VIEW.

PLANS FOR ANOTHER VISIONARY SHIP.

Going astern, the propellers are located under the water line at equal intervals, say 100 feet, so that a ship 600 feet long will carry five sets of propellers, those at the stern being raised a little to facilitate steering and to steady the ship. The motive power can be applied in various ways—by big engines in the bow, 'midships and stern; by big engines in the bow and stern working directly on the propeller shaft and at the same time running dynamos to generate electricity for motors to run the intermediate propellers; or by compound rotary engines on each shaft. But the special merit of the application of any power is that the shafts work independently of each other, so that if one breaks the ship continues on her course just the same while repairs are being made to the propellers after the shutters have been closed down over them.

The water-tight compartments are arranged on both sides of the vessel, thus doing away with the bulkhead compartments. It is claimed that in case of an accident if the 'midship is struck and breaks, each part of the ship could be closed water-tight through automatic shutters, and having separate engines and propellers, all working independent of each other, the vessel could continue on its way to port. Speed can be gained without question, through giving each propeller sufficient water surface to act on. With the propellers in use now two-thirds of the power employed is lost, as say 20,000 horse power, employed on two propellers, of say 15 feet diameter, can only push against a limited space of water, while in this new invention the power being distributed over, say twenty propellers of 5 feet diameter, each has its own volume of water to act on. It is also claimed that besides gaining higher speed, a vessel of this kind will be entirely safe; the propellers will keep the ship evenly balanced, and will cause it to cut steadily through the water; a number of the propellers will always be doing their work, and will keep the ship from rocking and pitching in a heavy sea.

A working model of the ship, to be propelled by electric power, is being built, and Henry Busse, formerly of Hamburg, and said to be an experienced designer of vessels, is aiding the inventor in perfecting his plans.

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AN EXTRA COPY OF THE PHOTO-GRAVURE SUPPLEMENT OF DIRECTORS OF THE LAKE CARRIERS' ASSOCIATION, TOGETHER WITH THE LARGE ENGRAVING OF THE STEAMER NORTH WEST, BOTH OF WHICH WERE CONTAINED IN OUR BIG ISSUE, WILL BE MAILED IN A PASTEBOARD TUBE TO ANY ADDRESS UPON RECEIPT OF 50 CENTS IN STAMPS.

## Feed Pumps of the Cruiser Minneapolis.

Among the interesting features of the latest and most successful cruiser of the United States navy, the Minneapolis, whose trial trip is referred to in this issue, are the main boiler feed pumps. They embrace many new and practical qualities in their construction. It is a weil known fact that seagoing vessels, particularly those used for naval purposes, have to reduce the weight and space occupied by the machinery to a minimum, features that are well represented in this vertical duplex admiralty type of Blake pump. The main feed pumps, of which there are eight, one in each fire room, have each ample capacity to supply two of the large double-ended boilers, but ordinarily feed but one. Each of these pumps have two 12-inch steam cylinders and two 7½-inch water cylinders, all of 12 inches stroke.

Besides this outfit of main feed pumps there are six of the same type in the engine room that are used for auxiliary feed and fire purposes, and also four for main and auxiliary feed for the donkey boiler. All parts that come in contact with the water are made of composition, i. e. pump cylinders, pump rods, valves, valve plates, water pistons, etc, the latter being supplied with adjustable hemp packing. As a high rate of piston speed is sometimes necessary for fire or other emergencies, the water passages and valve area are made unusually large. The Blake valve gear, which is of the improved form, as applied to these pumps is made of steel, with provision for ready adjustment while the pump is in operation. Outside of feed pumps the Minneapolis is fitted the same as her sister ship, the Columbia, with a complete outfit of Blake pumps, including special independent air pumps for the main engines, fire pumps, bilge pumps, etc.

## Miscellaneous Mention.

A committee representing the farming interests of New York state had a hearing a few days ago before the canal committee of the constitutional convention, and entered protest against further expenditures for canal enlargements, on the claim that the Erie system should be turned over to and maintained by the general government.

Contrary to the opinions of all whose judgment of lake passenger business might be thought worthy of consideration, the Northern Line steamship North West seems to be patronized in a way that would indicate a return on the big investment which she represents. On this week's trip her state room capacity was reported to be taken up practically to its limit after leaving Detroit, bound up the lakes.

Numerous trials with an instrument devised by M. Bersier, a Frenchman, by means of which the compass is made to perform the part of the helmsman, are said to have proven quite satisfactory. An electric current is placed to work on the desired course, and when the vessel gets off the course for which the electrical instrument is set, the current starts a motor in either direction and moves the rudder until the vessel returns to her proper course. Among the advantages claimed for this method is greater accuracy and no loss of distance in a run of twenty-four hours, as is usually allowed for ordinary steering by hand.

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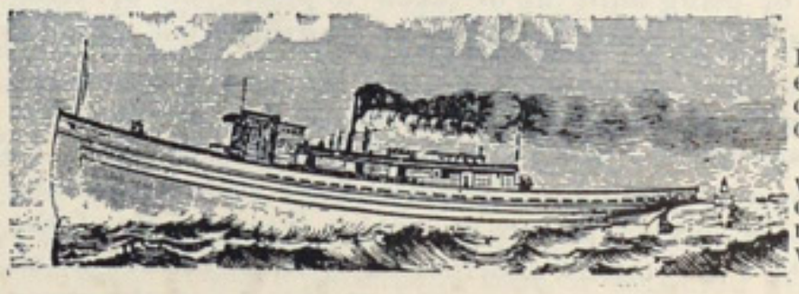

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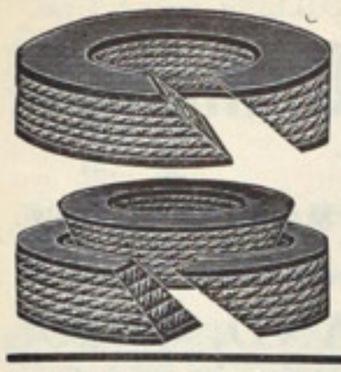

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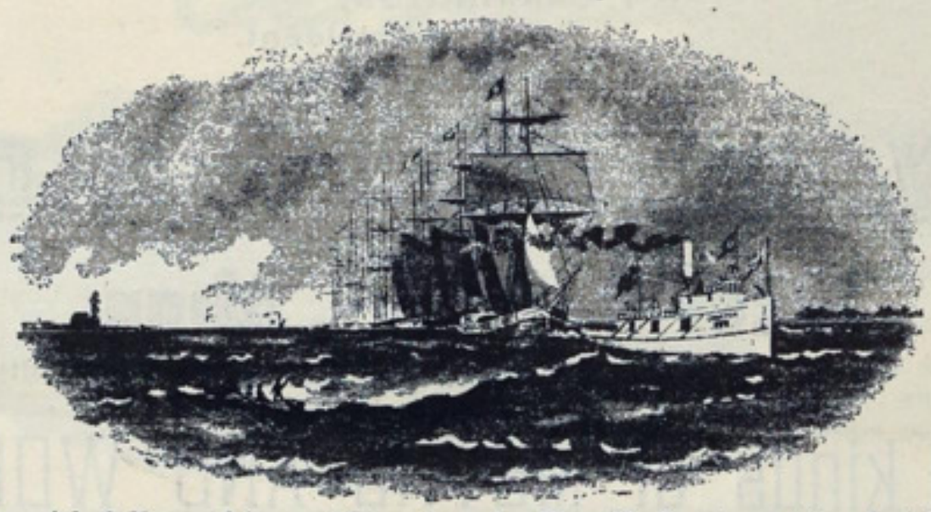

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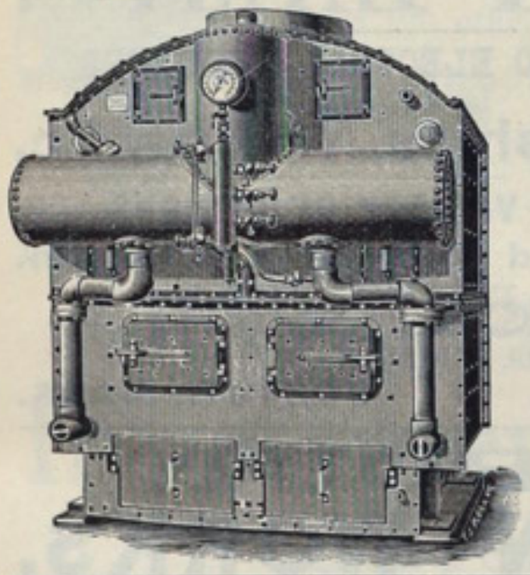

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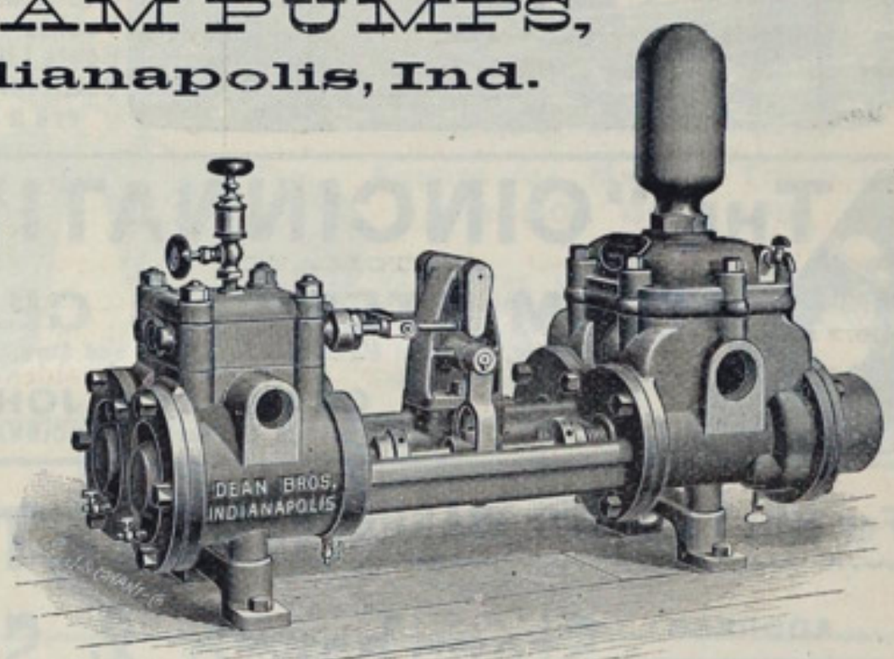


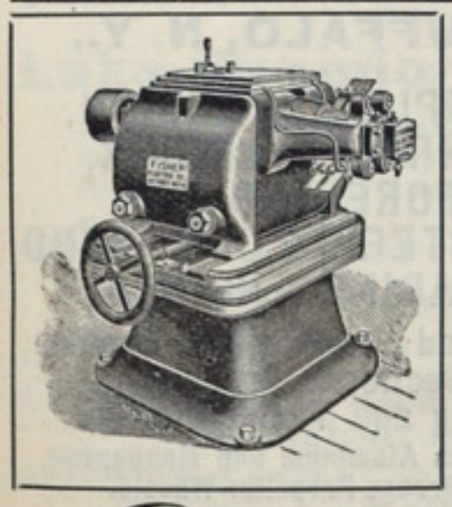

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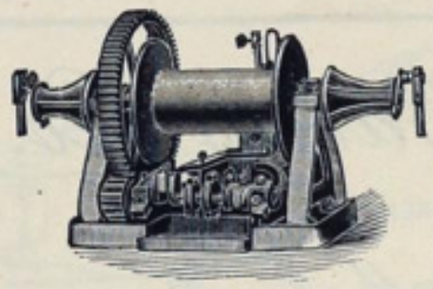

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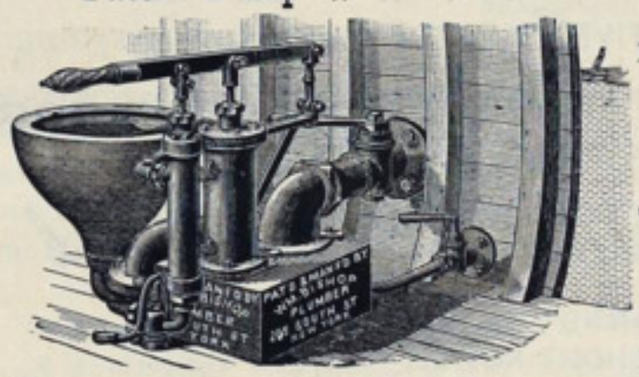

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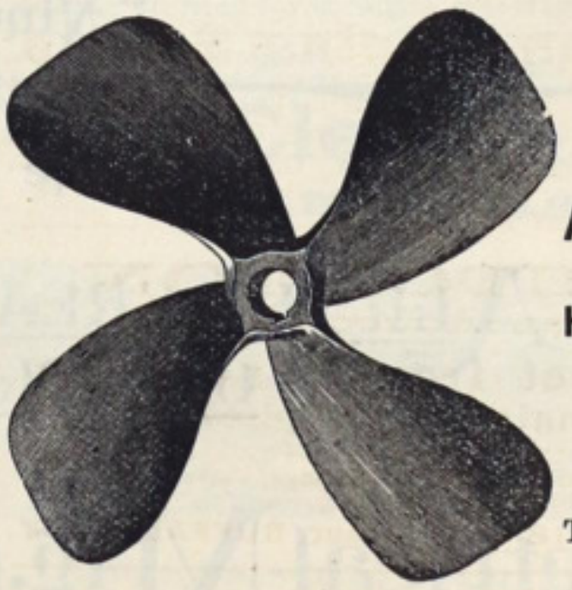

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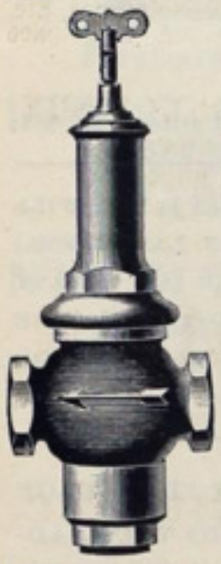

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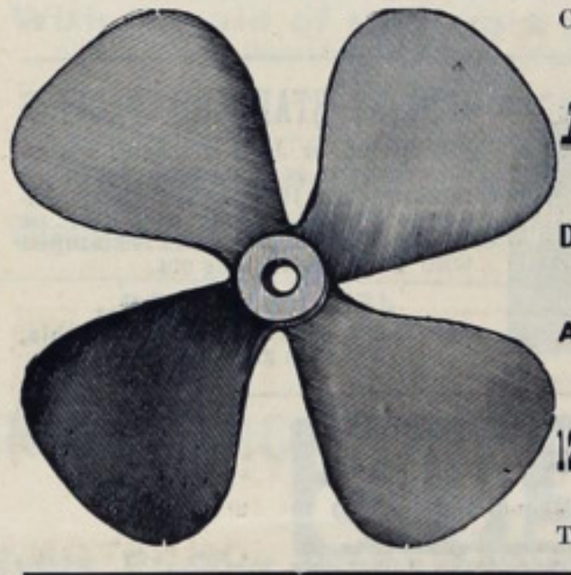

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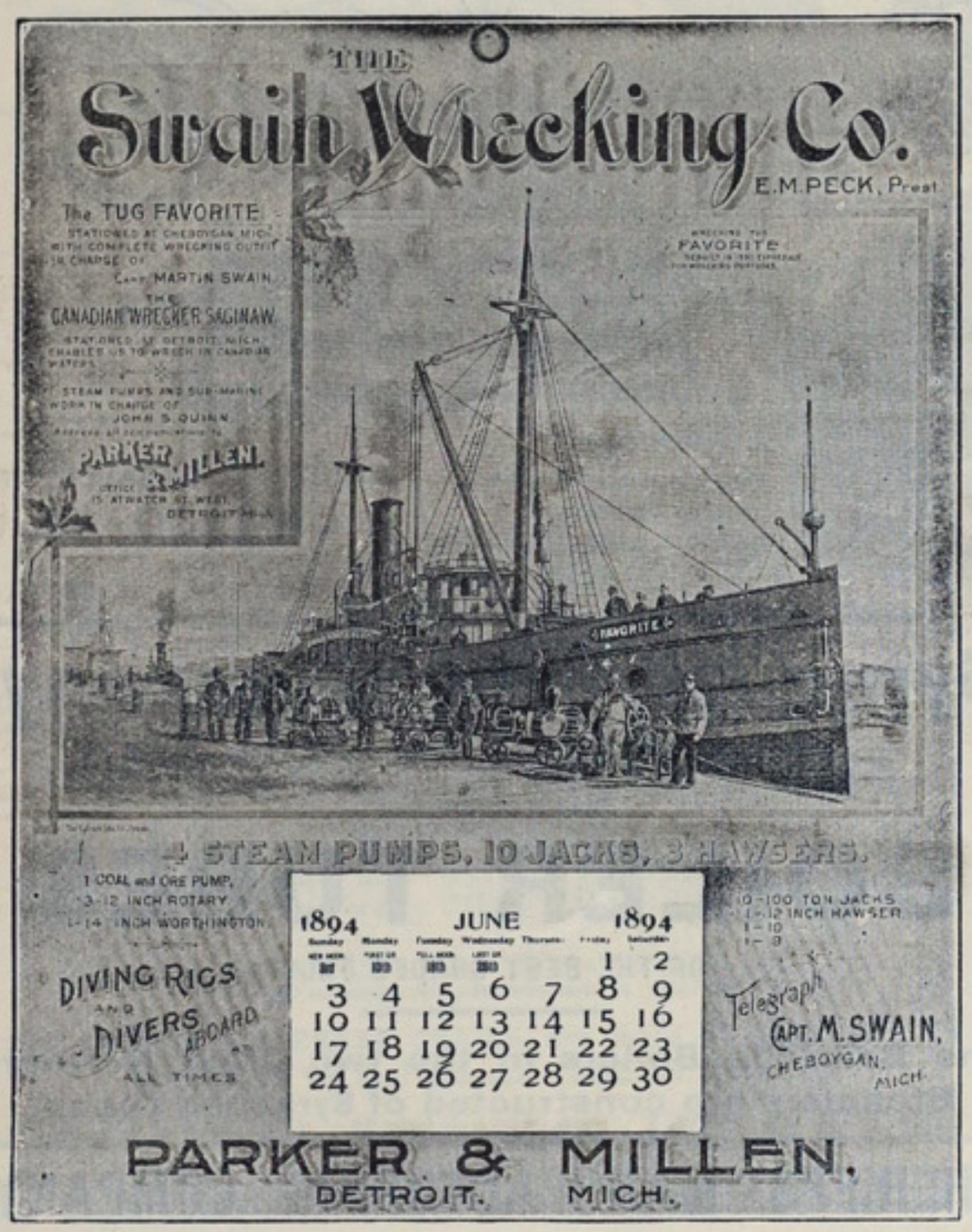

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References: American Steel Barge Co.; Capt. Alexander McDougall.

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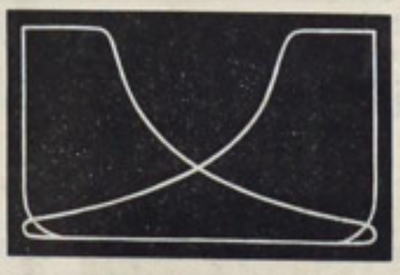

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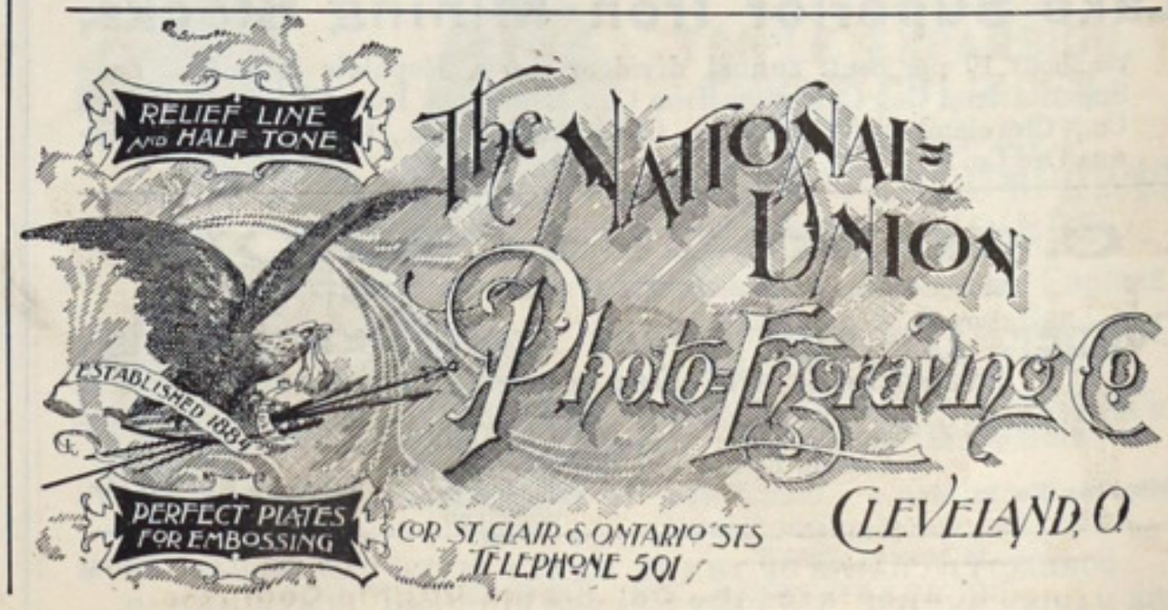

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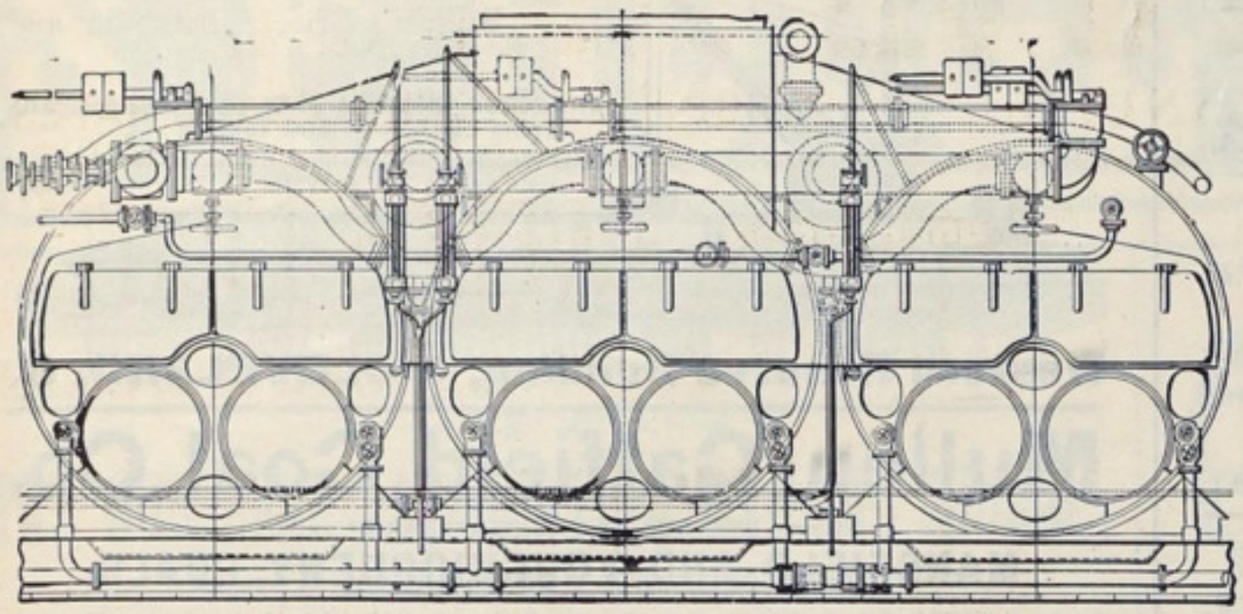

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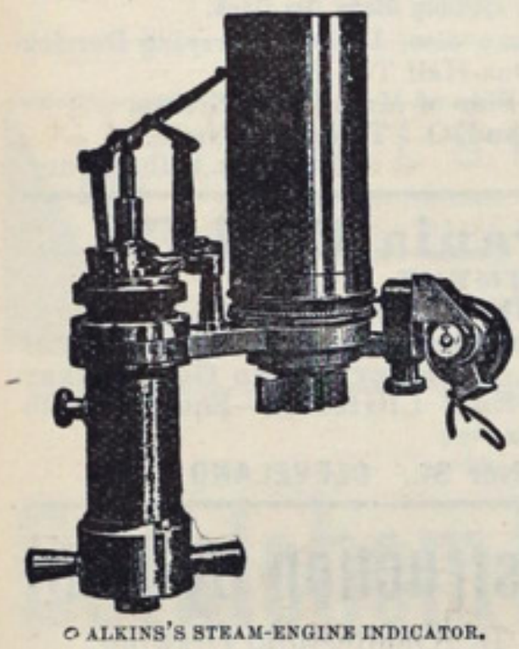

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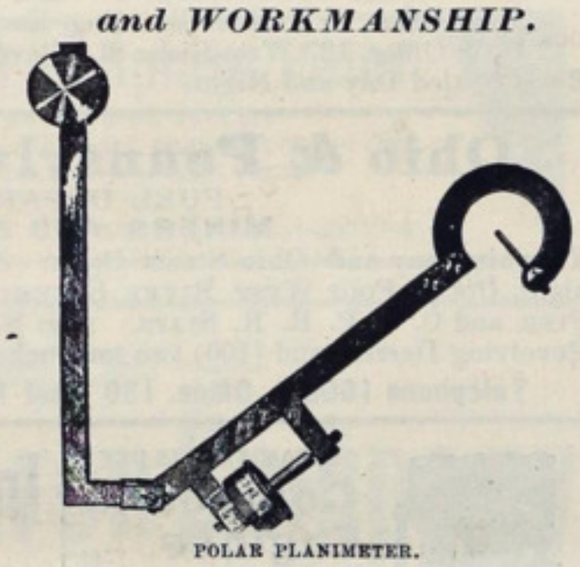

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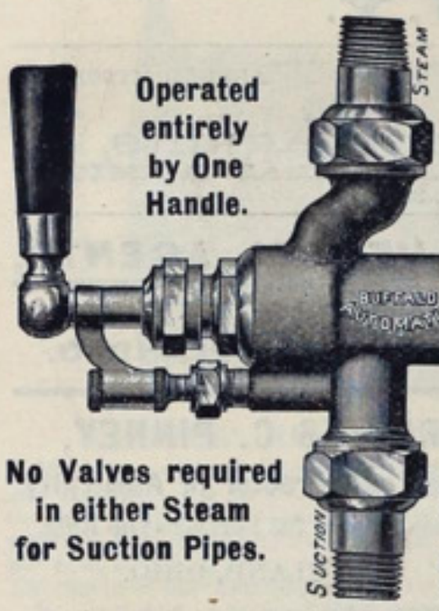


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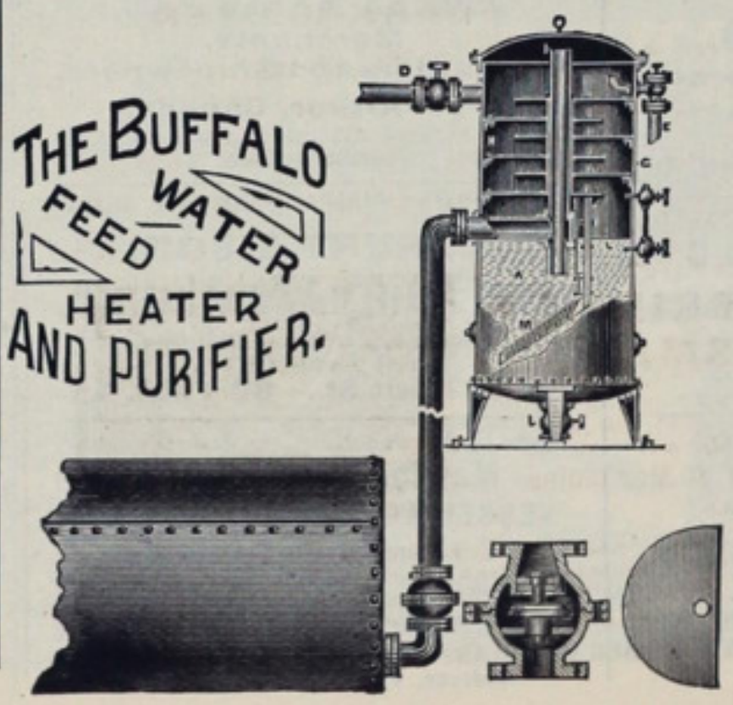

REFERENCES.

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B.—Boiler.
C.—Feed pipe to boiler.
D.—Steam pipe.
E.—Water supply pipe.
F.—Check valve.
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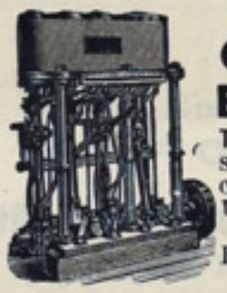

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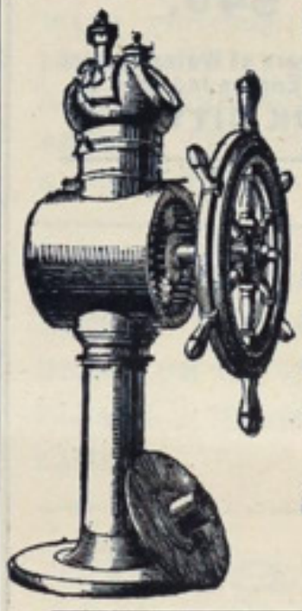

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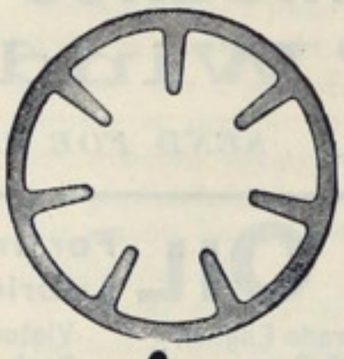

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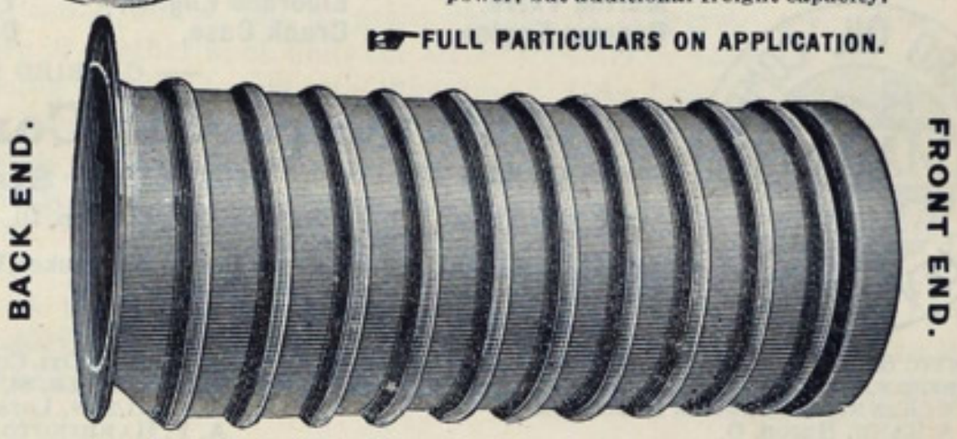


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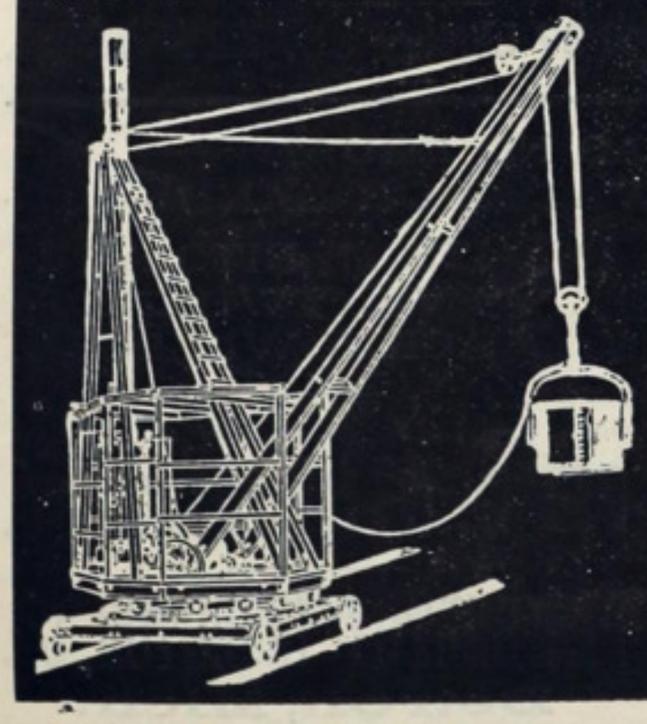

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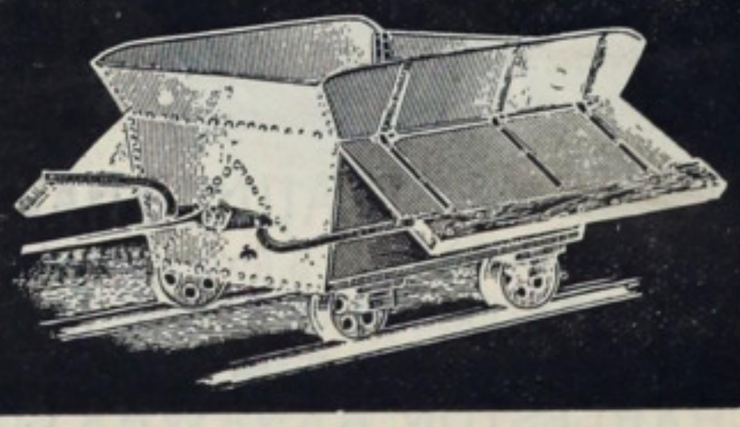

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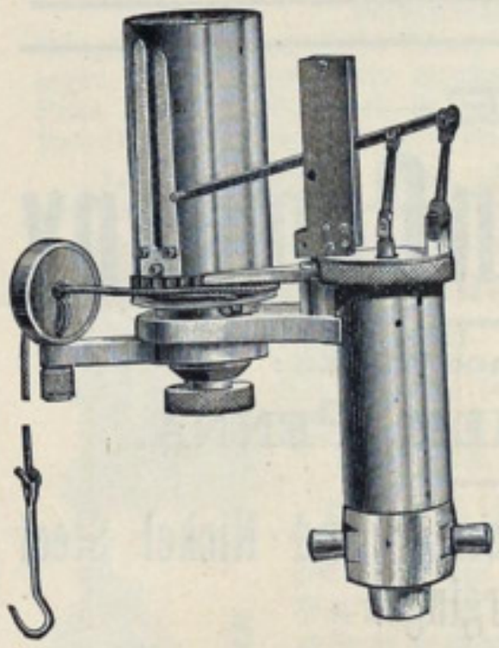

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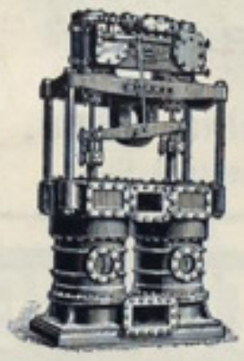

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**Vertical and Horizontal Pumps, Air Pumps for Surface and Jet Condensers.**

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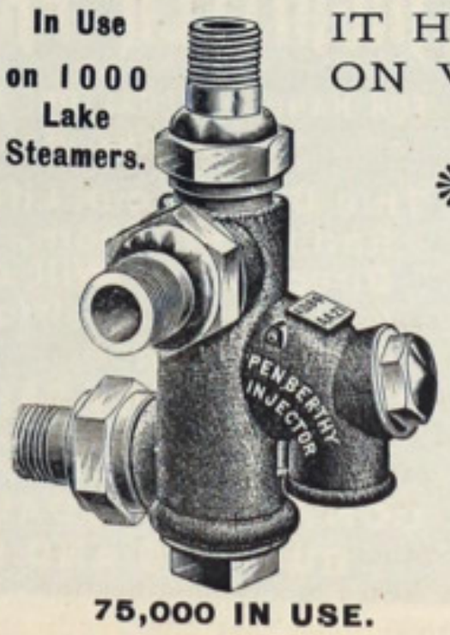


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IT HAS NO EQUAL ON WATER OR LAND.

ITS MERITS ARE EVERYWHERE ACKNOWLEDGED.

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